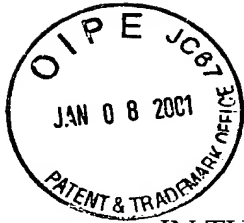


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Kimberly A. Lawrence
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SIGNATURE DATE

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the Application of)
René Langhans) Examiner: C. Goodman
on ROTARY CUTTING UNIT) Group Art Unit: 3724
Serial No.: 08/883,685)
Filed on: June 27, 1997) (Our Docket No. 2821-193)

Hartford, Connecticut, January 8, 2001

Hon. Assistant Secretary and Commissioner
of Patents and Trademarks
Washington, D.C. 20231

Appellant's Appeal Brief

SIR:

This appeal is taken from the Final Office Action mailed March 8, 2000 in which claims 1-3, 5-8, 10-12 and 14-21 of the above-referenced application are rejected under 35 U.S.C. §112 first and second paragraphs. Claims 1-3, 5-8, and 10-21 are also rejected under 35 U.S.C. §102.

Furthermore, the Examiner objects to the specification for informalities and objects to the drawings under 37 C.F.R. §1.83(a) for failing to show every feature of the invention specified in the claims. The drawings are also objected to under 37 C.F.R. § 1.84(p)(5) for failing to show every reference specified in the specification, and objected to for failing to maintain consistency.

The Appellant submits herewith and Amendment After Final to

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narrow the issues for consideration in this Appeal.

Real Party In Interest

The real party in interest in the above referenced application is:



ELPATRONIC AG
INDUSTRIESTRASSE 35
8962 BERGDIENTIKON
SWITZERLAND

RECEIVED
JAN 10 2001
TC 3700 MAIL ROOM

Related Appeals And Interferences

There are no related appeals or interferences of which Appellant is aware regarding the above referenced application.

Status of Claims

Claims 1-3, 5-8, 10-12 and 14-21 stand finally rejected by the Examiner.

Status of Amendments After Final Rejection

The claims stand amended as set forth in the Response to Office Action dated July 30, 1999. (The July 30, 1999 Response to Office Action is referred to as being filed on August 2, 1999 in the Final Office Action of March 8, 2000) Appendix A contains the claims as of July 30, 1999, including claims 1-3, 5-8, 10-12, and 14-21.

Appellant is submitting herewith an Amendment After Final Rejection addressing the section 112 rejections, pursuant to an interview with the Examiner conducted on April 20, 2000. Proposed amendments to Figures 1 and 2 are also submitted, pursuant to the aforementioned interview. The Amendment After Final

cancels certain rejected claims and places other rejected claims in better form for consideration on appeal. Appendix B contains the claims as amended in the Amendment After Final rejection, including claims 1-3, 5, 7-8, 11-12, 14, and 16-21.

Summary Of The Invention

The present invention is directed to circular cutter unit for equipment cutting flat lengths of material and sheet metal in a horizontal plane 10 having upper 2 and lower 4 circular blades, both blades 2, 4 in planes perpendicular to the horizontal plane and in a longitudinal direction 8. The circular blades 2, 4 are carried by an upper 1 and lower 3 blade shafts, respectively, which are parallel with the horizontal plane 10 and perpendicular to the longitudinal direction 8. A cutting gap between the circular blades 2, 4 is established and adjusted by loosening tightening screws 24 and rotating a displacement bush 13 using a pin wrench 25.

The two blade shafts 1, 3 are rigidly and rotatably mounted in a common frame 5. A transport ring 19 for frictionally driving the blade 2 on the other blade shaft 1 is mounted to rotate with the blade 4 on one blade shaft 3 and provide a non-positive drive connection between the blades 2, 4. The frame 5 is U-shaped when viewed from a point perpendicular to the horizontal plane of the flat material, with the upper leg 51 forming one leg of the U, and the lower leg 52 forming the other leg of the U, both connected by a flat yoke 53. The flat yoke 53 intersects the horizontal plane 10 at an acute angle. A plurality of several cutter can be mounted in a single apparatus and are driven by a common drive shaft 16 from which the units can be individually detached for servicing. A driving unit 30 having a motor is detachably coupled to the common drive shaft 16.

Issues

The issues to be resolved are:

- (1) Whether the specification, which is objected to, is clearly understood;
- (2) Whether the drawings, which are objected to, maintain consistency;
- (3) Whether the drawings, which are objected to under 37 C.F.R. 1.83(a), show every feature of the invention specified in the claims;
- (4) Whether the drawings, which are objected to under 37 C.F.R. 1.84(p)(5), show every reference specified in the specification;
- (5) Whether claims 1-3, 5-8, 10-12, and 14-21 are rejected under 35 U.S.C. § 112 first paragraph as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention;
- (6) Whether claims 1-3, 5-8, 10-12, and 14-21 are rejected under 35 U.S.C. § 112 second paragraph as being indefinite for failing to point out and distinctly claim the subject matter which Appellant regards as the invention; and
- (7) Whether claims 1-3, 5-8, and 10-21 are anticipated under 35 U.S.C. § 102 (b) by Suzuki et al., United States Patent No. 4,116,098.

Grouping Of Claims

Regarding claims 1-3, 5-8, 10-12 and 14-21 which were rejected under 35 U.S.C. § 112 first paragraph as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention; these claims do not stand or fall together.

Regarding claims 1-3, 5-8, 10-12 and 14-21 which were rejected under

Objections to the Drawings

The Examiner has objected to the drawings in paragraph 4 of the Office Action because references "26" and 27" should be interchanged to maintain consistency. Figure 1 has been so amended. The Examiner has also objected the drawings in paragraph 6 of the Office Action to as failing to comply with 37 C.F.R. 1.84(p)(5) because they do not include the reference sign α mentioned in the description. Figure 2 has been amended to show reference α and therefore the objection should be reversed.

Continuing with paragraph 6 of the Office Action, the Examiner has objected to the drawings under 37 C.F.R. 1.83(a) as not showing every feature of the invention specified in the claims, and that the "means for releasably coupling" must be shown or canceled from the claims. Figure 1 is amended to show the detachable drive unit 30 as a "means for releasably coupling", as noted in paragraph 1(d) of the April 20, 2000 Interview, and as described in the specification on page 6, line 25, and for that reason the objection should be reversed.

Section 112, First Paragraph, Rejections

Argument For Consideration Based On Entry of Amendment After Final

In the Final Office Action, the Examiner has rejected claims 1-3, 5-8, 10-12, and 14-21 under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. In accord with the April 20, 2000 interview with the Examiner, Appellant has amended the claims (as shown in Appendix B) and drawings, thereby obviating the section 112, first paragraph, rejections of the Final Office Action.

35 U.S.C. § 112 second paragraph as being indefinite for failing to point out and distinctly claim the subject matter which Appellant regards as the invention; these claims do not stand or fall together.

Regarding claims 1-3, 5-8, 10-12 and 14-21 which were rejected as being anticipated under 35 U.S.C. § 103 by Suzuki et al.; these claims do not stand or fall together.

ARGUMENT

Appellant wishes to thank the Examiner for the courtesy shown to Appellant's representative during the interviews conducted on April 20, 2000 and December 6, 2000. The content of the interview of April 20, 2000 is noted in the Statement of the Substance of the Interview as filed on May 4, 2000. The content of the interview of December 6, 2000 is noted in the December 13, 2000 Interview Summary filed by the Examiner, and indicates a continuing disagreement between the Examiner and Applicant regarding the novelty of a circular cutter unit with single drive shaft. The Interview Summary also notes the Examiner's view that an adjustable bush was not disclosed in the specification in the manner argued by Applicant.

Objection to the Specification

The Examiner has objected to the disclosure in paragraph 3 of the Office Action because the angle α is not clearly understood. The reference α is shown in amended Figure 2, and the objection should be reversed.

In paragraph 8 of the Final Office Action, the Examiner states that the description of how the bush 13 is displaced is confusing, and that the disclosure as filed does not show any "means" outside of the pin wrench 25 and the slot that the pin wrench fits through that would allow the turning of the bush 13.

With respect to the use of the bush for adjustment of the cutting gap on page 7 of the specification, FIGURE 1 as amended in the Amendment after Final clearly shows a circumaxial slot in the cutter frame 51 into which the pin wrench 25 is inserted. As noted in the Statement of the Interview of April 20, 2000, it was agreed that this proposed FIGURE 1 change was supported by the specification as filed. In particular, FIGURE 4 clearly shows the slot through which the pin wrench is inserted. The circumaxial slot of amended FIGURE 1 is a "means" which allows for the circumaxial movement of the pin wrench 25 and the turning of the bush 13. Therefore, the rejection of claims 1-3, 5-8, 10-12, and 14-21 should be reversed.

Continuing with paragraph 8 of the Office Action, the Examiner states that the description of the art shown on pg. 7 of the specification, line 29 to pg. 8, line 14, including a table shown on page 8, is not clearly understood, and that there is no nexus between the prior art representations and the invention. In response, the claims have been amended in the Amendment After Final by the Applicant to remove references to the comparison information, as shown in Appendix B. In particular, claims 10 and 15 referring to a cutting angle are canceled. Claim 11, which depended from claim 10, has been amended to depend from claim 1, and claim 16, which depended from claim 15, has been amended to depend from claim 14. As there are no longer claimed references to the comparisons shown on pg. 7, line 29 to pg. 8, line 14 of the specification, the rejections of claims 1-3, 5-8, 11-12, 14 and 16-21 are moot.

Based on the aforementioned, the section 112, first paragraph,

rejections of claims 1-3, 5-8, 11-12, 14 and 16-21 should be reversed.

Argument For Consideration If Amendment After Final Is Not Entered

If the Amendment After Final is not entered by the Examiner, the claims are as shown in Appendix A, and the following argument applies.

Referring to paragraph 8 of the Office Action, with respect to the use of the bush for adjustment of the cutting gap on page 7 of the specification, the slot through which a pin wrench is inserted as illustrated in FIGURE 4 could extend into one or both of the protuberances shown in FIGURE 1, but the slot is a circumaxial slot, not the axial slot noted by Examiner in FIGURE 1. The circumaxial slot is not visible in FIGURE 1 since FIGURE 1 is not intended to show a significant level of detail. Furthermore, the circumaxial slot could also extend into or totally occupy the space hidden behind the cutting blade 2 in FIGURE 1. FIGURE 4 clearly shows how rotation of the threaded bush 13 relative to the slotted nut 23 using pin wrench 25 produces axial movement of the bush 13, bearing 11, and shaft 1 in the upper leg 51 of frame 5. The circumaxial slot of FIGURE 4 is a "means" which allows for the circumaxial movement of the pin wrench 25 and the turning of the bush 13. Therefore, the rejections of claims 1-3, 5-8, 10-12, and 14-21 should be reversed.

In reference to the Examiner's continued confusion about pg. 7 of the specification, line 29 to pg. 8, line 14, Appellant directs Board's attention to the table on page 8 and the discussion of prior art from page 1, line 15 to page 2, line 22. Certain measurements and values of features in the prior art are represented as a baseline of 100% in the table. The parameters are illustrated for comparison purposed in Figs. 5 (prior art) and 6 (present invention). The corresponding measurements or values in the present invention are given as a percentage of the baseline.

For example, the blade overlap is 40% of the prior art overlap. Similarly, due to the smaller blade diameter and larger cutting angle, the cutting blades in the present invention spend 60% of the time used by the prior art to cut the same material thickness. Each parameter, other than cutting times, has a reference numeral in the table of page 8 corresponding to the parameter illustrated in Figs. 5 and 6. See specification p. 7, lines 29 - 32 and the references to Figs. 5 and 6 in the table on p. 8. The purpose of the table is to substantiate the improved cut-edge quality achieved by the invention as set out on p. 4, lines 12 - 21 of the specification. Cutting angle was previously defined in the Amendment of November 20, 1997, page 9, lines 3 - 6 and is also illustrated in Figs. 5 and 6.

In stating "merely shows inherent results" of a smaller cutting unit, Examiner has oversimplified the significance of the present invention. Blade diameter, shaft diameter, cutting angle, and cutting force on the blade are related to each other. The prior art design requires thick shafts to apply the proper cutting forces, however the thick shafts require large blade diameters. Large blade diameters, in turn, reduce cutting angle, thereby requiring more cutting force and demanding larger shafts. The design of the present invention allows reduced shaft diameters which allow smaller blade diameters, thereby increasing cutting angle and reducing the forces required to cut material. Based on the foregoing, the section 112, first paragraph, rejections of claims 1-3, 5-8, 10-12, and 14-21 should be reversed.

In addition, only claims 10 and 15 refer to information on pg. 7, line 29 to pg. 8, line 14, of the specification. The remaining claims 1-3, 5-8, 11-12, 14, and 16-21 do not claim this information. Therefore, the section 112, first paragraph, rejections should be reversed for at least the remaining claims.

Section 112, Second Paragraph, Rejections

Argument For Consideration Based On Entry of Amendment After Final

The Examiner has rejected claims 1-3, 5-8, 10-12, and 14-21 under 35 U.S.C. § 112 second paragraph as being indefinite for failing to point out and distinctly claim the subject matter which Appellant regards as the invention. The following arguments are based upon the amendments entered in the Amendment After Final, as shown in the claims in Appendix B.

In paragraph 10(i) of the Office Action, the Examiner states that the phrase "means for releasably coupling..." is vague and indefinite in that it is not clear what the clause encompasses. For clarity Appellant has amended the illustration of the drive unit 30 in FIGURE 1 to indicate that it is detachable as described in the specification on page 6, line 2. The phrase "means for releasably coupling...", as recited in independent claims 1, 18 and 21 of the present application, refers to a coupling that allows the drive unit 30 to be uncoupled from the single shaft 16. Such a coupling can include splines on the shaft, cogs, a dog clutch, and a belt and pulley, or equivalents to the foregoing. As understood by the Appellant during the Interview of April 20, 2000, the amended Figure 1 showing a detachable drive unit 30 as described in the specification on page 6, line 25 is acceptable to the Examiner. Therefore the rejections of independent claims 1, 18, and 21 should be reversed. Since claims 2-3, 5-8, 10-12 and 14-17 which directly or indirectly depend from claim 1, and claims 19-20 which depend directly from claim 18, the rejections of these claims should also be reversed.

Referring to paragraph 10(ii), the Examiner states that claim 6 is vague and indefinite in that it is not clear what the claim encompasses. Claim 6 has been cancelled in the Amendment After Final, and claim 7 is amended to depend directly from claim 1, as shown in Appendix B, and therefore the rejection of claim 6 is moot.

In paragraph 10(iii), the Examiner states that claim 7 is vague and indefinite in that it is not clear what the claim encompasses. Appellant respectfully disagrees. The Examiner requires a structural distinction between "means for rotatably supporting" recited in claim 7 and "means for establishing and adjusting a cutting gap between said two circular blades" recited in claim 1. Claim 7 is directed to:

A circular cutter unit according to claim 1 wherein the means for rotatably supporting said upper blade shaft includes an axially displaceable bush mounted in said upper leg of said frame.

The Board's attention is respectfully directed to page 7, lines 11-21 that disclose a threaded displacement bush 13 that is rotatable in relation to the frame 5, thereby producing axial movement of the upper circular blade. A means for rotatably supporting, as recited in claim 1, does not encompass axial movement of the rotating axis. As claim 7 is directed to axial movement using an "axially displaceable bush," the rejection of claim 7 should be reversed.

Referring to paragraph 10(iv) of the Office Action, claim 10 was not clearly understood by the Examiner. Claim 10 has been cancelled, rendering the rejection moot.

Referring to paragraph 10(v) of the Office Action, the Examiner states that the phrase "horizontal plane" in claims 12 and 17 lacks clear antecedent basis. Claims 12 and 17 have been amended to more clearly point out the "plane" as the "plane of the flat material". Therefore the section 112, second paragraph, rejections of claims 12 and 17 should be reversed.

Based upon the foregoing, the rejections of amended claims 1-3, 5, 7-8, 11-12, 14 and 16-21 based upon section 112, second paragraph, should be reversed.

Argument For Consideration If Amendment After Final Is Not Entered

The following arguments apply if the Amendment After the Final Office Action has not been entered by the Examiner, and the claims are as shown in Appendix A.

In paragraph 10(i) of the Office Action, the Examiner states that the phrase "means for releasably coupling..." is vague and indefinite in that it is not clear what the clause recited in claims 1, 18, and 21 encompasses. The Board's attention is respectfully directed to page 6, lines 19 - 21 of the specification. A gear 17, best seen in FIGURE 4, but also shown in Figs. 1 and 3, is disclosed as having a substantially square borehole 22 for single drive shaft 16, also shown in FIGURE 1. Gear 17 is slidable along single shaft 16 to allow its cutter unit to be positioned and driven anywhere along the shaft, as well as to allow easy removal of the cutter unit from the end of the shaft when the drive unit 30 is disconnected. The coupling between the drive unit 30 and the square drive shaft 16 can include, but is not limited to, splines, a dog clutch, cogs, belt and pulley, and equivalents of the forgoing. Socket wrench sets are common examples of disconnectable square drives. Thus the means for releasably coupling includes the single drive shaft 16.

As shown above, the rejections of claims 1, 18 and 21 should be reversed, and rejection of depending claims 2, 3, 5, 7-8, 11-12, 14, 15-17 and 19-20 should be reversed.

Referring to paragraph 10(ii), the Examiner states that claim 6 is vague and indefinite in that it is not clear what the claim encompasses. The claim is directed to the combination of a cutter unit and the recited means for mounting and positioning as discussed from page 5, line 32 to page 6, line 13. The rails 6 and bushings 26, 27 provide a means of mounting the frames 5, as well as positioning the

cutter units "in the transverse direction 7 perpendicular to the longitudinal direction 8." Such a bushing and shaft configuration is known generally and further details have therefore been omitted. Therefore the rejection of claim 6 should be reversed.

In paragraph 10(iii), the Examiner states that claim 7 is vague and indefinite in that it is not clear what the claim encompasses. Appellant respectfully disagrees. The Examiner requires a structural distinction between "means for rotatably supporting" recited in claim 7 and "means for establishing and adjusting a cutting gap between said two circular blades" recited in claim 1. Claim 7 is directed to:

A circular cutter unit according to claim 1 wherein the means for rotatably supporting said upper blade shaft includes an axially displaceable bush mounted in said upper leg of said frame.

The Board's attention is respectfully directed to page 7, lines 11-21 that disclose a threaded displacement bush 13 that is rotatable in relation to the frame 5, thereby producing axial movement of the upper circular blade. A means for rotatably supporting, as recited in claim 1, does not encompass axial movement of the rotating axis. As claim 7 is directed to axial movement using an "axially displaceable bush," the rejection of claim 7 should be reversed.

Regarding paragraph 10(iv), where the clarity of claim 10 is questioned, Board's attention is directed to the table and discussion on page 8 and Figs. 5 and 6 where the angle is illustrated by the tangents as previously explained. See Preliminary Amendment of November 20, 1997, page 9, lines 3 - 6. Claim 10 refers to the increased cutting angle disclosed in the table on page 8, which improves the quality of the cut edge. The cutter unit of the state of the art achieves a cutting angle of only 5 degrees.

The cutting angle is directly related to blade diameter and the overlap of the blades. The more the blades overlap, the higher the angle between the flat

material and the blades at initial contact. Reducing the overlap moves the tangents of the blades closer to the flat material. Therefore, with smaller blades, less overlap is needed to achieve a desired cutting angle, as seen in Figs. 5 and 6. Therefore the rejection of claim 10 should be reversed.

Referring to paragraph 10(v) of the Office Action, the Examiner states that the phrase "horizontal plane" recited in claims 12 and 17 lack clear antecedent basis. The phrase "horizontal plane" refers to the "plane of the flat material" as recited in claim 1. Therefore the section 112, second paragraph, rejections of claims 12 and 17 should be reversed.

Based upon the foregoing, the rejections of claims 1-3, 5-8, 10-12, and 14-21 based upon section 112, second paragraph, should be reversed.

Section 102 Rejections

Argument Based On Entry Of The Amendment After Final

The following arguments are based on the entry of the amended claims and drawings in the Amendment After Final, as shown in Appendix B.

Argument is not addressed to canceled claims.

The Examiner finally rejected claims 1-3, 5-8, and 10-21 under U.S.C. 35 § 102(b) citing U.S. Patent No. 4,116,098 issued to Suzuki et al.

The Suzuki reference cited in the final Office Action discloses a gang slitting machine having multiple cutter units 15A, 15B suspended between housings 183, 185 and supporting member 179, 181. An upper blade 17 is driven by an upper drive shaft 21, and a lower blade 19 is driven by a lower shaft 23. (See Suzuki, col. 3).

The Examiner states that claims 1-3, 5-8, and 10-21 are unpatentable under 35 U.S.C. § 102 because they are allegedly anticipated by the above-referenced prior art patent. Appellant respectfully disagrees with the Examiner's conclusion. To

be anticipatory, each and every element of the claimed invention must be embodied in the prior art. In re Spada, 911 F.2d 705 (Fed. Cir. 1990). The identical invention must be shown in as complete detail as is contained in the patent claim. Richardson v. Suzuki Motor Co., 868 F.2d 1226. The claimed invention, as described in appropriately construed claims, must be the same as that of the reference, in order to anticipate. Glaverbel S. A. v. Northlake Mkt'g & Supp., 45 F.3d 1550 (Fed. Cir. 1995).

Suzuki does not disclose a "a frame having a substantially U-shape when viewed in a direction perpendicular to the plane of the flat material with upper and lower legs interconnected by a flat yoke..." as recited in claim 1 of the present application and shown in Fig. 1. Instead, each cutter unit 15A, 15B as shown in Fig. 4 of the Suzuki reference, when viewed from a direction perpendicular to the horizontal plane, such as from above the cutter unit, displays an approximately rectangular frame, not a substantially U-shaped frame as recited in claims 1 and 18 of the present invention. The frame 5 disclosed in the present invention is U-shaped when viewed from a point perpendicular to the horizontal plane of the flat material, such as from above the frame, with the upper leg 51 forming one leg of the U, and the lower leg 52 forming the other leg of the U, both connected by a flat yoke 53.

The Examiner, in paragraph 12 of the Final Office Action of March 8, 2000, states that Suzuki has a U-shaped frame. However, the Suzuki frame displays a U-shape only when viewed in a direction parallel to the plane of the flat material, that is, viewing the frame from the side, not perpendicular to the plane of the flat material, as recited in claims 1 and 18 of the present application.

The present invention as recited in claim 18, and shown in Fig. 1, discloses "a frame having substantially a U-shape when viewed from above the horizontal plane...". Again, each cutter unit 15A, 15B as shown in Fig. 4 of the

Suzuki reference, when viewed from a direction perpendicular to the horizontal plane, such as from above the cutter unit, displays an approximately rectangular frame, not a substantially U-shaped frame as recited in claims 1 and 18 of the present invention.

The absence of the foregoing claimed elements in the prior art relied upon obviates any anticipatory rejection under 35 U.S.C. § 102. Absence from the reference of any claimed element negates anticipation. Kloster Speedsteel AB v. Crucible, Inc., 793 F.2d 1565 (Fed. Cir. 1986). Therefore, because each element of the claimed invention is not found in the Suzuki reference, it is respectfully submitted that the prior art patent applied by the Examiner does not anticipate claims 1 and 18 of the present application, and the rejections under §102 should be reversed.

Furthermore, the present claims recite a means for releasably coupling, which means includes the single drive shaft 16 to drive the entire cutter unit, as recited in amended independent claims 1, 18 and 21. (See FIGURE 1 and page 6, lines 19-33). The drive shaft 16 drives a lower gear 18 which is attached to a lower circular blade 4 and an associated transport ring 19. The upper blade 2 and upper transport ring 20 are driven by friction when a sheet is introduced between the lower, motor-driven blade/transport ring 4 and the upper blade/transport ring 2. (See Figs. 2, 3 and 4, and p. 6, lines 19- 21 and 34-35 to p. 7, lines 1-10).

In contrast, the apparatus 1 in the Suzuki reference requires separate drive shafts 21, 23 for the upper 17 and lower 19 shearing tools. (See Suzuki, Figs. 2, 3, and 4 and Col. 3, lines 62-68).

In addition, the Suzuki reference does not disclose a non-positive drive connection between the circular blades including a transport ring mounted for rotation with the blade on one of the blade shafts and in driving relationship with the blade on the other of the blade shafts, as recited in claims 1, 18 and 21. Instead,

Suzuki shows individual drive shafts 21, 23 for driving each blade 17, 19, and disks 143, 173 opposed to the blades 17, 19 which create the horizontal distance or clearance between the upper and lower shearing tools 17 and 19 according to the thickness or nature of the worksheet to be slitted. (See Suzuki specification col. 9, lines 16-31 and col. 10, lines 6-13). Suzuki does not have or need to have a driving relationship between blades 17, 19 for one blade to drive the other blades, as recited in claims 1, 18 and 21 of the present application.

The absence of the foregoing claimed elements in the prior art relied upon obviates any anticipatory rejection under 35 U.S.C. § 102. Absence from the reference of any claimed element negates anticipation. Kloster Speedsteel AB v. Crucible, Inc., 793 F.2d 1565 (Fed. Cir. 1986). Therefore, because each element of the claimed invention is not found in the Suzuki reference, it is respectfully submitted that the prior art patent applied by the Examiner does not anticipate the present invention, and the rejections under §102 should be reversed.

On the basis of the discussions above concerning the Suzuki patent, it is respectfully submitted that independent claims 1, 18 and 21 of the present application patentably distinguish over the Suzuki patent as applied by the Examiner. Since claims 2-3, 5, 7-8, 11-12, 14 and 16-17 directly or indirectly depend from claim 1, and claims 19-20 depend directly from claim 18, the section 102 rejections of these claims should also be reversed.

Argument For Consideration If Amendment After Final Is Not Entered

The following arguments apply if the Amendment After the Final Office Action has not been entered by the Examiner, and the claims are as shown in Appendix A.

Appellant respectfully disagrees with the Examiner's conclusion that

claims 1-3, 5-8, 10-12 and 14-21 are anticipated by the Suzuki reference. Suzuki does not disclose a "a frame having a substantially U-shape when viewed in a direction perpendicular to the plane of the flat material with upper and lower legs interconnected by a flat yoke...", as recited in claim 1 of the present application and shown in Fig. 1. Instead, each cutter unit 15A, 15B as shown in Fig. 4 of the Suzuki reference, when viewed from a direction perpendicular to the horizontal plane, such as from above the cutter unit, displays an approximately rectangular frame, not a substantially U-shaped frame as recited in claims 1 and 18 of the present invention. The frame 5 disclosed in the present invention is U-shaped when viewed from a point perpendicular to the horizontal plane of the flat material, such as from above the frame, with the upper leg 51 forming one leg of the U, and the lower leg 52 forming the other leg of the U, both connected by a flat yoke 53.

The Examiner, in paragraph 12 of the Final Office Action of March 8, 2000, states that Suzuki has a U-shaped frame. However, the Suzuki frame displays a U-shape only when viewed in a direction parallel to the plane of the flat material, that is, from the side, not perpendicular to the plane of the flat material, as recited in claims 1 and 18 of the present application.

The present invention as recited in claim 18, and shown in Fig. 1, discloses "a frame having substantially a U-shape when viewed from above the horizontal plane...". Again, each cutter unit 15A, 15B as shown in Fig. 4 of the Suzuki reference, when viewed from a direction perpendicular to the horizontal plane, such as from above the cutter unit, displays an approximately rectangular frame, not a substantially U-shaped frame as recited in claims 1 and 18 of the present invention.

Absence from the reference of any claimed element negates anticipation. Kloster Speedsteel AB v. Crucible, Inc., 793 F.2d 1565 (Fed. Cir. 1986).

Therefore, because each element of the claimed invention is not found in the Suzuki reference, it is respectfully submitted that the prior art patent applied by the Examiner does not anticipate independent claims 1 and 18 of the present application, and the rejections under §102 should be reversed.

Furthermore, the present invention recites a means for releasably coupling, which means includes the single drive shaft 16 to drive the entire cutter unit. (See FIGURE 1 and page 6, lines 19-33). (See FIGURE 1 and page 6, lines 19-33), unlike the Suzuki reference. The drive shaft 16 drives a lower gear 18 which is attached to a lower circular blade 4 and an associated transport ring 19, as recited in claims 1, 18 and 21. The upper blade 2 and upper transport ring 20 are driven by friction when a sheet is introduced between the lower, motor-driven blade/transport ring 4 and the upper blade/transport ring 2, as disclosed in claims 1, 18 and 21. (See Figs. 2, 3 and 4, and p. 6, lines 19- 21 and 34-35 to p. 7, lines 1-10).

In addition, the Suzuki reference does not disclose a non-positive drive connection between the circular blades including a transport ring mounted for rotation with the blade on one of the blade shafts and in driving relationship with the blade on the other of the blade shafts, as recited in claims 1, 18 and 21. Instead, Suzuki shows individual drive shafts 21, 23 for driving each blade 17, 19, and disks 143, 173 opposed to the blades 17, 19 which create the horizontal distance or clearance between the upper and lower shearing tools 17 and 19 according to the thickness or nature of the worksheet to be slitted. (See Suzuki specification col. 9, lines 16-31 and col. 10, lines 6-13). Suzuki does not have or need to have a driving relationship between blades 17, 19 for one blade to drive the other blades, as recited in claims 1, 18 and 21 of the present application.

Absence from the reference of any claimed element negates anticipation. Kloster Speedsteel AB v. Crucible, Inc., 793 F.2d 1565 (Fed. Cir. 1986).

Therefore, because each element of the claimed invention is not found in the Suzuki reference, it is respectfully submitted that the prior art patent applied by the Examiner does not anticipate independent claims 1, 18 and 21 of the present application, and the rejections under §102 should be reversed.

Since claims 2-3, 5-8, 10-12 and 14-17 directly or indirectly depend from claim 1, and claims 19-20 depend directly from claim 18, the rejections of these claims should also be reversed.

Summary


In view of the foregoing, it is Appellant's position that claims 1-3, 5, 7-8, 11-12, 14, and 16-21 as amended and shown in Appendix B patentably distinguish over Suzuki et al. Accordingly, Appellant respectfully requests that the Board reverse the Examiner's objections and rejections of the claims as unpatentable over the § 112 rejections and the cited reference.

If the Amendment After Final has not been entered, in view of the foregoing, it is Appellant's position that 1-3, 5-8, 10-12 and 14-21 as shown in Appendix A are patentably distinguishable over Suzuki. Accordingly, Appellant respectfully requests that the Board reverse the Examiner's objections and rejections of the claims as unpatentable over the § 112 rejections and the cited reference. Petition is hereby made for a 2 month extension of time to submit this Appeal Brief. A check for \$390.00 is enclosed in payment of fees associated with the Petition.

A check in the amount of \$310.00 to cover the fee for filing this Appeal Brief is enclosed.

No additional fees are considered to be due. However, if additional fees are determined to be due in conjunction with the filing of this Appeal and Accompanying Amendment After Final, or if it is determined that an overpayment has been made, please debit or credit, as appropriate, our deposit account No. 13-0235.

Respectfully submitted,

By 
Michael T. Clorite
Registration No. 44,620
Attorney for Appellant

McCORMICK, PAULDING & HUBER
CityPlace II, 185 Asylum Street
Hartford, CT 06103-4102
(860) 549-5290

APPENDIX A

The claims stand amended as set forth in the Response to Office Action dated July 30, 1999.

Claim 1

1. A circular cutter unit for cutting lengths of flat material comprising:
 - upper and lower circular blades lying in planes substantially perpendicular to a plane defined by the flat material and parallel with a longitudinal direction of the flat material;
 - upper and lower blade shafts respectively supporting said upper and lower circular blades, said shafts extending parallel with said plane of the material and perpendicular to said longitudinal direction;
 - a non-positive drive connection between said circular blades including a transport ring mounted for rotation with the blade on one of the blade shafts and in driving relationship with the blade on the other of the blade shafts;
 - a frame having substantially a U-shape when viewed in a direction perpendicular to the plane of the flat material with upper and lower legs interconnected by a flat yoke intersecting said plane of the flat material at an acute angle,
 - means for rotatably supporting said upper and lower blade shafts respectively in said upper and lower legs;
 - means for establishing and adjusting a cutting gap between said two circular blades; and
 - means for releasably coupling one of the circular blades of said cutter unit to a driving unit having a motor.

Claim 2

A circular cutter unit according to claim 1 wherein said cutting gap is adjusted to between about 0.005 mm and about 0.030 mm.

Claim 3

A circular cutter unit according to claim 1 wherein said means for releasably coupling one of the circular blades is coupled to said lower circular blade.

Claim 5

A circular cutter unit according to claim 1 wherein the transport ring of said non-positive drive connection between said blade shafts is in frictional driving engagement with the other of the blades.

Claim 6

A circular cutter unit according to claim 1 and further comprising means for displaceably mounting said frame for movement perpendicular to said longitudinal direction, said means for displaceably mounting including at least one guide rail extending parallel with said blade shafts.

Claim 7

A circular cutter unit according to claim 6 wherein the means for rotatably supporting said upper blade shaft includes an axially displaceable bush mounted in said upper leg of said frame.

Claim 8

A circular cutter unit according to claim 1 wherein said cutting gap between said two circular blades is adjusted to a range of 0.01 to 0.020 mm.

Claim 10

A circular cutter unit according to claim 1 wherein said upper and lower blade shafts support said circular blades in overlapping relationship at a cutting angle in a range of 6 to 8° at a nib of the overlapping circular blades.

Claim 11

A circular cutter unit according to claim 10 wherein each of said blade shafts has a diameter of less than 25 mm.

Claim 12

A circular cutter unit according to claim 11 wherein said acute angle at which said flat yoke intersects said horizontal plane is in a range of 8 to 12°.

Claim 14

A circular cutter unit according to claim 1 wherein said circular blades have cutting edges overlapping radially by a distance in a range of 0.18 to 0.23 mm.

Claim 15

A circular cutter unit according to claim 14 wherein said upper and lower blade shafts support said circular blades at a cutting angle in a range of 6.5 to 7.5°.

Claim 16

A circular cutter unit according to claim 15 wherein each of said blade shafts has a diameter of less than 20 mm.

Claim 17

A circular cutter unit according to claim 16 wherein said acute angle at which said flat yoke intersects said horizontal plane is in a range of 9 to 11°.

Claim 18

An apparatus for cutting flat lengths of sheet metal in a generally horizontal plane comprising:

a plurality of circular cutting units each including:

upper and lower circular blades lying in planes substantially perpendicular to the horizontal plane and parallel with a longitudinal direction in which the sheet metal is fed between the circular blades,

upper and lower blade shafts respectively supporting said upper and lower circular blades, said shafts extending parallel with said horizontal plane and perpendicular to said longitudinal direction,

a frictional drive connection between said blade shafts including a transport ring mounted respectively on each one of the upper and lower blade shafts adjacent the upper and lower circular blades respectively, and disposed in frictional driving relationship with the circular blade on the other of the upper and lower blade shafts;

a frame having substantially a U-shape when viewed from above the horizontal plane with upper and lower legs interconnected by a flat yoke intersecting said horizontal plane at an acute angle, and

means for rotatably supporting said upper and lower blade shafts respectively in said upper and lower legs, and means for establishing and adjusting a cutting gap between said two circular blades; and

means for releasably coupling each said cutter unit to a driving unit having a motor;

a plurality of parallel guide rails extending perpendicular to said longitudinal direction; and

means on each of said frames slidably engaging said guide rails so that each of said circular cutter units is independently positionable along said rails.

Claim 19

An apparatus according to claim 18 wherein said means for establishing and adjusting said gap sets said gap to a width between 0.005 mm and 0.030 mm.

Claim 20

An apparatus according to claim 18 wherein said circular cutting units are mounted on said guide rails with said circular blades of each circular cutting unit oriented in parallel relationship with the circular blades of the other cutting units.

Claim 21

A cutter unit for cutting flat lengths of material comprising:

a supporting unit;

a driving unit having a motor;

a cutter head releasably connected to said supporting unit, said cutter head comprising;

first and second circular blades having cutting edges;

first and second blade shafts respectively supporting said first and second circular blades in positions to cooperatively cut the material and to maintain a cutting gap between said cutting edges;

a frame having first and second legs and a yoke interconnecting said legs;

means for rotatably supporting said first and second blade shafts respectively in said first and second legs;

means for releasably connecting one of said two circular blades to said motor of said driving unit; and

means for transmitting drive motion provided by said driving unit to the other of said circular blades.

APPENDIX B

The claims stand amended as of entry of the Amendment After Final Office Action filed with the present Appeal Brief.

Claim 1

1. A circular cutter unit for cutting lengths of flat material comprising:
 - upper and lower circular blades lying in planes substantially perpendicular to a plane defined by the flat material and parallel with a longitudinal direction of the flat material;
 - upper and lower blade shafts respectively supporting said upper and lower circular blades, said shafts extending parallel with said plane of the material and perpendicular to said longitudinal direction;
 - a non-positive drive connection between said circular blades including a transport ring mounted for rotation with the blade on one of the blade shafts and in driving relationship with the blade on the other of the blade shafts;
 - a frame having substantially a U-shape when viewed in a direction perpendicular to the plane of the flat material with upper and lower legs interconnected by a flat yoke intersecting said plane of the flat material at an acute angle,
 - means for rotatably supporting said upper and lower blade shafts respectively in said upper and lower legs;
 - means for establishing and adjusting a cutting gap between said two circular blades; and
 - means for releasably coupling one of the circular blades of said cutter unit to a driving unit having a motor.

Claim 2

A circular cutter unit according to claim 1 wherein said cutting gap is adjusted to between about 0.005 mm and about 0.030 mm.

Claim 3

A circular cutter unit according to claim 1 wherein said means for releasably coupling one of the circular blades is coupled to said lower circular blade.

Claim 5

A circular cutter unit according to claim 1 wherein the transport ring of said non-positive drive connection between said blade shafts is in frictional driving engagement with the other of the blades.

Claim 7

A circular cutter unit according to claim 1 wherein the means for rotatably supporting said upper blade shaft includes an axially displaceable bush mounted in said upper leg of said frame.

Claim 8

A circular cutter unit according to claim 1 wherein said cutting gap between said two circular blades is adjusted to a range of 0.01 to 0.020 mm.

Claim 11

A circular cutter unit according to claim 1 wherein each of said blade shafts has a diameter of less than 25 mm.

Claim 12

A circular cutter unit according to claim 11 wherein said acute angle at which said flat yoke intersects said plane of the flat material is in a range of 8 to 12°.

Claim 14

A circular cutter unit according to claim 1 wherein said circular blades have cutting edges overlapping radially by a distance in a range of 0.18 to 0.23 mm.

Claim 16

A circular cutter unit according to claim 14 wherein each of said blade shafts has a diameter of less than 20 mm.

Claim 17

A circular cutter unit according to claim 16 wherein said acute angle at which said flat yoke intersects said plane of the flat material is in a range of 9 to 11°.

Claim 18

An apparatus for cutting flat lengths of sheet metal in a generally horizontal plane comprising:

a plurality of circular cutting units each including:

upper and lower circular blades lying in planes substantially perpendicular to the horizontal plane and parallel with a longitudinal direction in which the sheet metal is fed between the circular blades,

upper and lower blade shafts respectively supporting said upper and lower circular blades, said shafts extending parallel with said horizontal plane and perpendicular to said longitudinal direction,

a frictional drive connection between said blade shafts including a transport ring mounted respectively on each one of the upper and lower blade shafts adjacent the upper and lower circular blades respectively, and disposed in frictional driving relationship with the circular blade on the other of the upper and lower blade shafts;

a frame having substantially a U-shape when viewed from above the horizontal plane with upper and lower legs interconnected by a flat yoke intersecting said horizontal plane at an acute angle, and

means for rotatably supporting said upper and lower blade shafts respectively in said upper and lower legs, and means for establishing and adjusting a cutting gap between said two circular blades; and

means for releasably coupling each said cutter unit to a driving unit having a motor;

a plurality of parallel guide rails extending perpendicular to said longitudinal direction; and

means on each of said frames slidably engaging said guide rails so that each of said circular cutter units is independently positionable along said rails.

Claim 19

An apparatus according to claim 18 wherein said means for establishing and adjusting said gap sets said gap to a width between 0.005 mm and 0.030 mm.

Claim 20

An apparatus according to claim 18 wherein said circular cutting units are mounted on said guide rails with said circular blades of each circular cutting unit oriented in parallel relationship with the circular blades of the other cutting units.

Claim 21

A cutter unit for cutting flat lengths of material comprising:

a supporting unit;

a driving unit having a motor;

a cutter head releasably connected to said supporting unit, said cutter head comprising;

first and second circular blades having cutting edges;

first and second blade shafts respectively supporting said first and second circular blades in positions to cooperatively cut the material and to maintain a cutting gap between said cutting edges;

a frame having first and second legs and a yoke interconnecting said legs;

means for rotatably supporting said first and second blade shafts respectively in said first and second legs;

means for releasably connecting one of said two circular blades to said motor of said driving unit, and

means for transmitting drive motion provided by said driving unit to the other of said circular blades.